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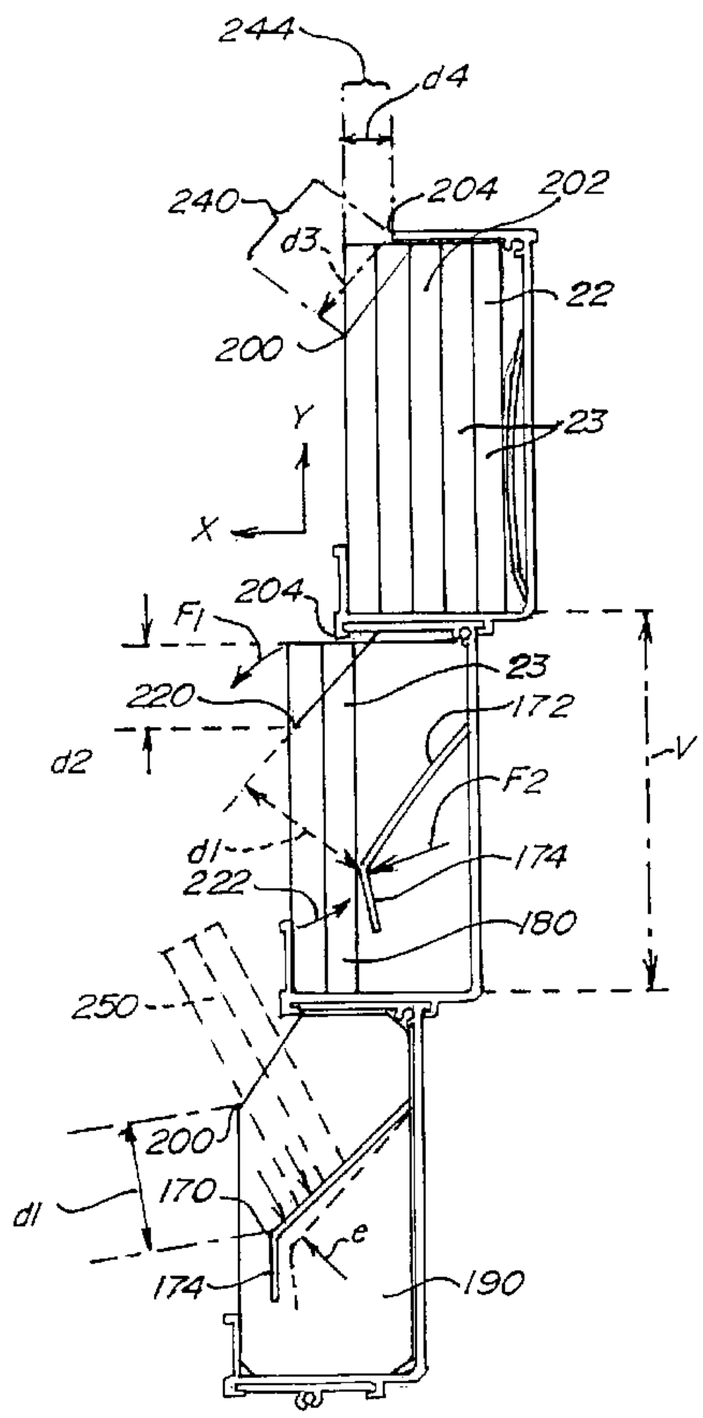

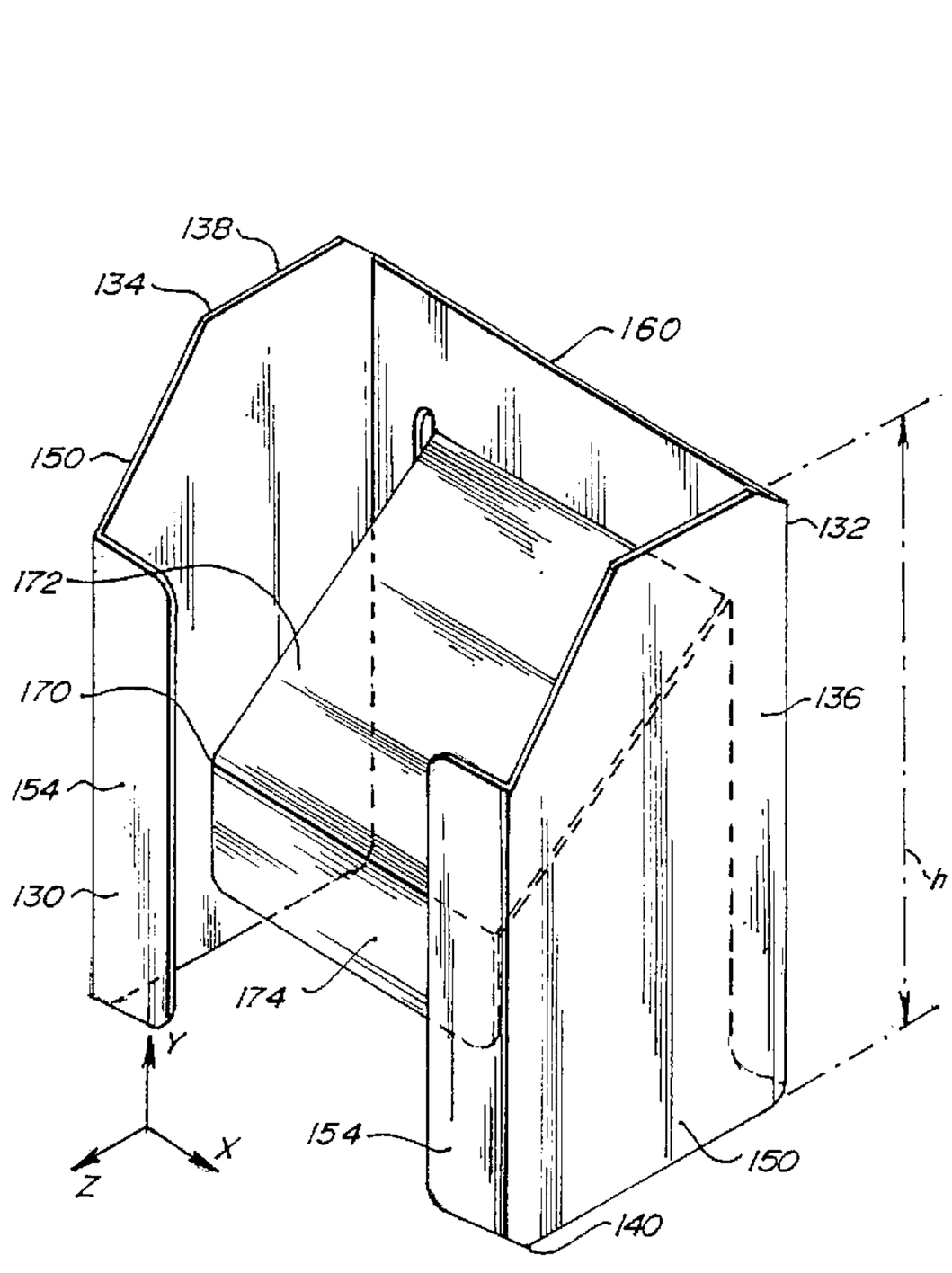

(57) Abrégé/Abstract:
A modular display system for polyhedron shaped merchandise, such as DVD's, software, computer games, CD's and the like. In a preferred embodiment, the system comprises a plurality of individual pocket constraints configured as integral modules aligned and retained in a set of cascading shelves (50). The individual pocket modules are an integral from having side

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(57) Abrégé(suite)/Abstract(continued):
constraints (134, 136), a connection portion (160) extending between the side portions, and a pushing portion (170) having a merchandise engagement portion (174) connecting to a bias-providing portion (172). The cascading shelves are, in a preferred embodiment, formed from a plurality of stackable shelves. Each shelf, in a preferred embodiment, has a horizontal lower base (54), a vertical back side (56), a vertical front portion (60), and a horizontal top piece (58) forming generally a G-shape in the cross-section. The shelves are cascaded such that each successive higher shelf is set rearwardly from the shelf below.

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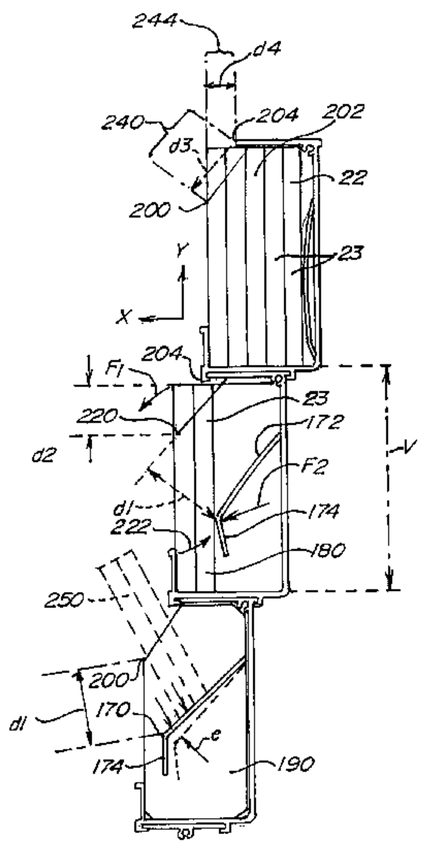

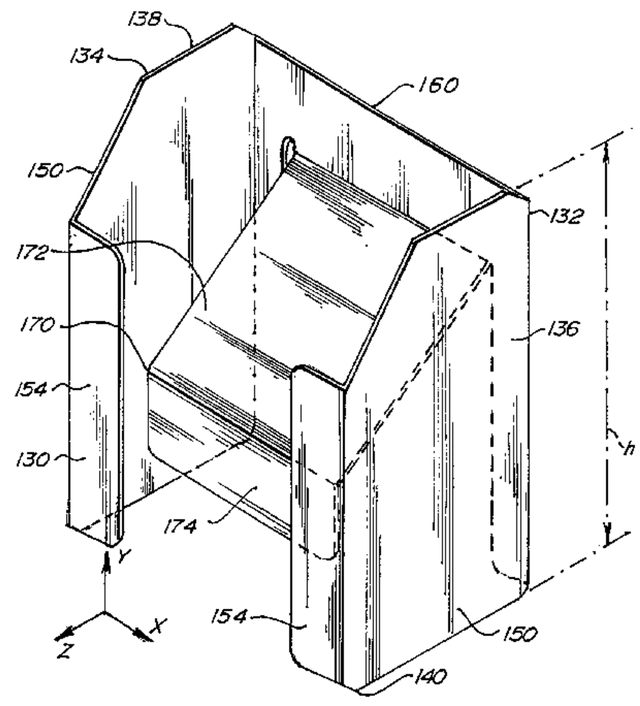

(57) Abstract: A modular display system for polyhedron shaped merchandise, such as DVD's, software, computer games, CD's and the like. In a preferred embodiment, the system comprises a plurality of individual pocket constraints configured as integral modules aligned and retained in a set of cascading shelves (50). The individual pocket modules are an integral from having side constraints (134, 136), a connection portion (160) extending between the side portions, and a pushing portion (170) having a merchandise engagement portion (174) connecting to a bias-providing portion (172). The cascading shelves are, in a preferred embodiment, formed from a plurality of stackable shelves. Each shelf, in a preferred embodiment, has a horizontal lower base (54), a vertical back side (56), a vertical front portion (60), and a horizontal top piece (58) forming generally a G-shape in the cross-section. The shelves are cascaded such that each successive higher shelf is set rearwardly from the shelf below.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

MERCHANDISE DISPLAY

This application has priority to Provisional Application No. 60/234,068 filed September 20, 2000, and incorporates the entire disclosure of said application herein by reference.

BACKGROUND OF THE INVENTION

This invention relates to displays, more particularly the invention relates to merchandise displays with pusher mechanisms for retail display of packaged merchandise such as DVD's.

Various means have been utilized for displaying DVD's, cassette tapes, CD's and the like. These are typically shelves with adjustable dividers or open bins viewable from the front. These are not ideal in that they are expensive to construct, do not provide optimal viewing of the product, do not ideally "front" the product, and do not generally present a highly attractive display.

Typically these products allow a significant quantity of the fronted items to be simultaneously removed from the merchandise display. This presents a loss control issue in that thieves are known to quickly grab a great quantity of DVD's or CD's and then run out of the store. To the extent that quantities of such merchandise cannot be quickly grabbed, the significant loss of these larger quantities can be controlled.

The known displays that provide a fronting feature generally require a rather complex mechanism for pushing the items forward to the front of the display or utilize separate removable pusher components which can be misplaced and can increase manufacturing costs. These displays are not particularly aesthetically appealing particularly when the display is empty. Some display systems utilize gravity which typically does not efficiently utilize the display case area and does not reliably front the product.

A display for boxed merchandise items is needed that is relatively easy and inexpensive to fabricate, that is effective in preventing thefts of significant quantities of product, that is effective in fronting the product, and that is aesthetically attractive.

SUMMARY OF THE INVENTION

A modular display system for polyhedron shaped merchandise, such as DVD's, software, computer games, CD's and the like, and a method for manufacturing such a display, is relatively inexpensive to fabricate and presents a highly attractive and functional display. In a preferred embodiment, the system comprises a plurality of individual pocket constraints configured as integral modules aligned and retained in a set of cascading shelves. The individual pocket modules are an integral form having side constraints, a connecting portion extending between the side portions, and a pushing portion having a merchandise engagement portion connecting to a bias-providing portion. The cascading shelves are, in a preferred embodiment, formed from a plurality of stackable interlocking shelves. Each shelf, in a preferred embodiment, has a horizontal lower base, a vertical back side, a vertical front portion, and a horizontal top piece forming generally a G-shape in the cross-section. In an embodiment, the pocket modules and shelves provide a constrained zone of removal that effectively limits the number of items that can be removed at one time while still allowing substantially full frontal view of the product.

A feature and advantage of particular embodiments of the invention is that the shelves may be formed from plastic by extrusion and the extruded shelves assemble, stack, and lock together in a cascade arrangement. This provides great economy and ease in manufacturing of a highly functional and effective display.

A feature and advantage of particular embodiments of the invention is that a zone of removal of product pieces is constrained by the shelves and pocket modules in cooperation limiting the number of items that can be removed and requiring a certain level of dexterity. In preferred embodiments this is one or two items at a time. Insertion and loading of the pocket modules, in contrast, is relatively easy and generally the number of product pieces that can be inserted at one time is greater than the number product pieces that can be removed at one time.

A feature and advantage of particular embodiments of the invention is that the pocket module may be formed from a die cut sheet of transparent plastic, preferably PETG, that is bent by way of heating for defining the portions and form of the module. This provides an

attractive module with the appropriate constraining portions and fronting portion in an integral module.

A feature and advantage of particular embodiments of the invention is that the modules may be arrangeable in any desired matrix by providing shelves of a desired particular length and stacked in a desired quantity.

A feature and advantage of particular embodiments of the invention is that the pocket module may be configured of any desired size for display of different product.

A feature and advantage of particular embodiments of the shelf is that the horizontal lower base may have a downwardly facing horizontal slot to receive the horizontal top piece of a shelf immediately therebelow.

A feature and advantage of particular embodiments of the invention is that displays may me easily constructed of minimal principal components; namely a base plate, a plurality of shelves, a plurality of pocket modules, and side panels. Various size components may be retained for subsequent assembly and certain components will universally fit the variable sized components. For example, the side panels will generally work with any length shelves.

A feature and advantage of particular embodiments of the invention is that it can be retrofitted into existing steel shelf gondolas. For example, pocket modules can be fixed to existing shelves to provide many of the features described herein.

A feature and advantage of particular embodiments of the invention is that the extruded shelves may have a screw receiving portion, a slot for the horizontal top portion of a shelf to be positioned therebelow, and a label slot all defined by integral structure. This provides for easy stacking assembly and utilization of a minimal number of fasteners, such as screws.

A feature and advantage of particular embodiments of the pocket module is that the module can be utilized in isolation as a self-standing product dispenser/display.

A feature and advantage of particular embodiments of the pocket module is that the pusher provides an ideal forward pushing force that effectively fronts product, that retracts relatively easily for further stocking, that is mechanically simple and extremely robust, that is essentially maintenance free, and that has an extremely long useful life.

Another feature and advantage of particular embodiments of the invention is a pocket module that the configuration of the pusher portion inhibits or prevents the forward tilt of product pieces in the receiving zone. This inhibits removal of more than one or two items. This is advantageous particularly when the pocket volume is not fully loaded.

A feature and advantage of particular embodiments of the invention is that the lower base, the back side, the front wall, the top, may all be integral with one another. This provides for ease of manufacture and also provides for ease of assembly and cleaning if necessary.

DESCRIPTION OF THE FIGURES

Fig. 1 is a perspective view of a merchandise display according to the invention.

Fig. 2 is a front elevational view of the display of Fig. 1.

Fig. 3 is a plan view of the display of Fig. 1

Fig. 4 is a perspective view of an alternative embodiment of the invention.

Fig. 5 is elevational view of the display of Fig. 4.

Fig. 6 is a plan view of the display of Fig. 4.

Fig. 7 is an end view of plastic extrusions for shelves in accordance with the invention.

Fig. 8 is an end view of a flange.

Fig. 9 is a side elevational view of shelves with pocket modules mounted therein in various states of loading in accordance with the invention herein.

Fig. 10 is an embodiment of a pocket module in accordance with the invention.

Fig. 11 is a plan view of a cutout of a sheet of plastic prior to bending for forming the pocket module of Fig. 10.

Fig. 12 is a further embodiment of a pocket module in accordance with the invention.

Fig. 13 is a front elevational view of the pocket module of Fig. 12.

Fig. 14 is a top plan view of the pocket module of Fig. 12.

DETAILED DESCRIPTIONS OF PREFERRED EMBODIMENTS

Figs. 1-5 illustrate two configurations of merchandise displays 20, 24 in accordance with the invention for holding groupings 22 of individual uniform sized product pieces 23. These embodiments principally comprise a display rack 26 and pocket modules 28 retained therein. The display rack is comprised of a plurality of supports, configured as shelves 32, end panels 36, a base 40 and feet 42.

Referring to Figs. 7, 8 and 9, details of the shelves are illustrated. Fig. 7 in particular shows two shelves 50 which are assembled together in a cascading fashion as illustrated in Figs. 1 and 4. The upper shelf is offset slightly backward from the lower shelf. These shelves each are comprised of an integral base portion 54, an integral back side portion 56, an integral top portion 58, and an integral front portion 60. The shelves as illustrated are preferably formed of a plastic extrusion. Adjacent to the top portion and back side portion is a boss (70) defining an aperture 72 configured as a screw hole. Additional structure configure as bosses 76, 78 are positioned on the base portion 54 of the shelf defining a slot 82. The slot is sized for receiving the top portion 58 of an adjacent shelf. Flange 86 which may also be an extrusion is also sized to be a sliding fit within the slot 82. The flange has a boss 90 with an aperture configured as a screw hole 92. Additionally, the front portion of each shelf is configured to a slot 96 for receiving a label or decorative insert.

An ideal material for the shelves is styrene with a wall thickness of approximately .125 inches. A suitable range for the wall thickness of the shelves is believed to be .075 to .250 inches.

The shelves 56 are fixed intermediate the end panels and secured in place by way of fastener portions configured as screws 102 extending through apertures 104 in the end panels. Each shelf has a pocket module-receiving region 108 generally defined by the base portion, back side portion and front portion.

Referring to Figs. 2 and 7, the end panel 36 is secured to the stack of shelves 112 by way of a plurality of screws 102 that attach to the fastening portions 70 of the cascaded interconnected shelves as well as the screw hole 92 in the bottom flange 86 inserted in the slot of the lower most shelf. Each shelf can be seen to be generally G-shaped in the cross section and has a end face 116 that is generally planar and with the shelves stacked all of the end faces of each of the stacked shelves form an overall planar surface 120 which confronts and engages the inside surface 124 of the end panel 36 providing a very secure structure.

Referring to Figs. 10, 11, 12, 13, and 14, various views of two different embodiments of pocket modules are illustrated. Fig. 11 illustrates a cut-out portion 125 of a flat resilient sheet material, such as PETG (polyethyleneterephthalate glycol), that is bent along the fold lines 126 under heat to form the module as illustrated in Figs. 10 and 12.

Each pocket module has a front side 130, a back side 132, a left side 134, a right side 136, a top side 138, and a bottom side 140. A pair of sidewall portions 150 are positioned at the left side and right side of the pocket module. A pair of front wall portions 154 are connected and integral with the side wall portions and are positioned at the front side. A portion 160 extends between the sidewall portions. In the embodiments of Figs. 10 and 12 this portion extending between the sidewalls also comprises a back wall portion positioned at the back side. A pusher portion 170 comprising a spring portion 172 and an engagement portion 174 is integral with and extends from the back side at the back wall portion. In certain embodiments, additional portions may be added such a bottom wall portions 175, and a top wall portion 176 indicated by dot-dash lines on Figs. 12 and 14. In these embodiments, the appropriate sections to bent are added to the pattern, such as illustrated in Fig. 11.

A suitable plastic for the pocket constraints is PETG (polyethyleneterephthalate glycol modified) preferably formed from sheets approximately .060 inches thick. An appropriate range for providing the necessary structural rigidity while still allowing easy folding and providing the appropriate bias on the pusher portion is believed to be in the range of .020 to .200 inches.

Referring to Fig. 9 the pocket modules positioned in a set of stacked shelves is illustrated in various loading levels. In the lower most shelf of Fig. 9 the pusher portion 170 is located in its natural unstressed position. In such a position both the engagement portion 174 and the spring portion 172 are generally planar. It should be noted that other non-planar configurations may also be suitable and are included in certain embodiments of the invention claimed herein. The pocket module generally has a pocket volume 190 which is a receiving region for the groupings 22 of merchandise 22. The merchandise is comprised of the individual product pieces 23. The middle shelf of Fig. 9 illustrates a pocket volume with two product pieces positioned therein and the pusher portion displaced from its original position such as that shown in the lower most shelf. In this position a forward bias is provided by the engagement portion 174 on the back most piece 180 of the merchandise. The merchandise is configured in a backwardly extending aligned grouping 202 which is comprised of one or several product pieces. The upper most shelf of Fig. 9 has a pocket module fully loaded to capacity with the pusher portion deflected generally to its maximum deflection point. In this particular position the bias is provided by the bending of the pusher portion as well as some stressing and deformation of the back wall portion.

Note that the vertical height h of the pocket module is substantially equal to the vertical spacing v between the base portion of adjacent stacked shelves.

The various components assembled as illustrated in Figs. 2, 7, and 9, may be secured together by the use of suitable plastic adhesives. Or if disassembly is desirable the use of mechanical fasteners is sufficient to secure the display stands together.

Referring to Fig. 9, the pocket modules in various states of loading illustrate the functionality of this embodiment of the invention. The front wall portions 130 of the pocket modules require that removal of the product pieces is upward above the top edge 200 of the

front wall portion. The top edge 200 and the front edge 204 of the top portion 58 of the shelf define a zone of removal 210. The design of the pocket modules requires the product pieces to be extracted substantially in a vertical direction. The positioning of the pusher portion and the relatively high positioning of the top edge 200 of the front wall portions 130 resists or precludes forward tipping of the product pieces seated in the pocket module and thus, in the embodiment illustrating precludes removal of more than one. Forward tipping can only occur by manual force F_1 about the pivot point 220 defined by the top edge 200. This is resisted by force F_2 provided by the pusher portion. The resistance of forward tipping provided by the pusher portion is enhanced by distance d_1 of the engagement portion from the pivot point 220, ideally 1.5 time or more the distance d_2. Moreover, the displacement of the pusher portion in the direction of the pusher portion indicated by the arrow 222, which is necessary for forward tipping of the product, is resisted by compression of the spring portion, as compared to a simple deflection e when product is loaded as illustrated in the bottom most shelf.

Referring to the uppermost shelf of Fig. 9, a zone of access 240 to the pocket is defined as the minimal distance d_3 of the opening between the top edge 200 of the first wall portions and the front edge of the top wall portion 58. Product pieces can be inserted into the pocket in this range although they can be removed only out of the zone of removal 244 defined substantially by the horizontal distance d_4 between front edge 204 of the top wall portion and the front wall portions 140. As illustrated in the lower most shelf, a grouping 250 of at least 2 product pieces can be inserted into the zone insertion whereas illustrated in the uppermost shelf, only one product piece can be removed.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being made to the appended claims rather than to the foregoing description to indicate the scope of the invention. When used herein "substantially" includes exactly.

The present invention may be embodied in other specific forms without departing from the spirit or essential attributes thereof, and it is therefore desired that the present embodiment be considered in all respects as illustrative and not restrictive, reference being made to the appended claims rather than to the foregoing description to indicate the scope of the invention. When used herein "substantially" includes exactly.

AMENDED CLAIMS

[received by the International Bureau on 11 March 2002 (11.03.02);
original claims 1, 5,11, 15 and 17 amended; remaining claims unchanged (5 pages)]

1. A display system for displaying and dispensing a plurality of backwardly extending aligned groupings of like shaped products, the display comprising:

a plurality of vertically stacked shelves for supporting a plurality of pocket modules, the pocket modules horizontally aligned on each shelf, each shelf formed from plastic, and having an integral base portion, an integral back side portion, an integral top portion, and an integral front constraint portion, the shelves in an upright stack with at least one shelf offset rearwardly from a shelf below said one shelf;

each pocket module formed of plastic for holding and fronting one grouping of the plurality of backwardly extending aligned groupings of product pieces, the pocket module having a pair of sidewall portions, a front side, a back side, a portion extending between the sidewalls, and a pusher portion extending from the back side, the pair of sidewall portions, the portion extending between the sidewalls, and the pusher portion all integral with one another.

2. The display of claim 1, wherein at least one shelf has a pair of integral bosses defining a horizontal slot open downwardly, the slot sized to fit and engage with the top portion of a shelf immediately therebelow.

3. The display of claim 1, further comprising at least one side panels, and wherein each shelf comprises at least one fastener portion, and wherein the side panel is positioned upright adjacent to the stack of upright shelves and the display further comprises a plurality of fasteners attaching the panels to the stack of upright shelves.

4. The display of claim 3, wherein the at least one boss is configured as an screw opening, wherein the side panel has a plurality of holes, wherein the fasteners comprise a plurality of screws, wherein the at least one fastener portion has a screw hole and wherein the side panel is attached to the stack of upright shelves by way of the screws extending through the side panel into the screw hole.

5. The display of claim 1, wherein the plurality of shelves is arranged in a cascading configuration.

6. The display of claim 1, wherein each display module has a height and the shelves have a vertical spacing therebetween, and the height is substantially equal to the vertical spacing.

7. The display of claim 1 wherein the pocket module further comprises an integral front wall portion, and wherein the portion extending between the sidewall portions is a backwall portion, and wherein the pusher portion extends at an angle between 0 and 90 degrees from said backwall portion.

8. The display of claim 1, wherein the pocket module is formed from transparent plastic, wherein the front of the product pieces have a frontal surface area and whereby at least 80 % of the frontal surface of the product piece in the front of each grouping is visible from the front of the display.

9. The display of claim 1, wherein each pocket module and the respective shelf supporting said pocket module defines a pocket volume for the grouping of product pieces, and wherein there is an insertion and removal zone for said pocket volume and wherein said removal zone is constrained whereby not more that one product piece can be removed at a time.

10. The display of claim 1, wherein each display module has an integral front wall at the front side of each of said display modules and wherein the removal zone is constrained by said front wall whereby each of said product pieces can be inserted and removed only in a substantially vertical direction from said pocket volume and wherein the pocket volume has a most forwardly position and wherein only the product piece in the most forwardly position may be removed.

11. A display comprising a plastic pocket module having a front side, a back side, a left side, a right side, a top, and a bottom, the pocket module comprising a pair of sidewall portions located at the left side and right side respectively, a backwall portion extending between the sidewall portions, a pusher portion extending from the back side and integral with the backwall portion, the pusher portion extending forwardly to substantially the front side, the pusher portion having a product piece engagement portion and a spring portion whereby when the product piece engagement portion is displaced rearwardly, a

forward bias is provided to the engagement portion by the spring portion, and wherein the sidewall portions, the portion extending between the sidewall portions, and the pusher portion are all integral and formed of plastic.

12. The display of claim 11 wherein the module is formed of transparent plastic.

13. The display of claim 11 wherein the portion extending between the sidewalls comprises a backwall portion that is substantially planar at the back side and the spring portion is substantially planar and extends at an angle from the backwall portion.

14. The display of claim 11 further comprising a rack of horizontal supports in an upright cascading stack and further comprising a plurality of said pocket modules, each horizontal support supporting a row of said pocket modules, each pocket module having a pocket area for storing said product pieces and an access and removal zone for insertion and removal of product, and wherein each of said access and removal zones is constrained by the respective pocket module and a horizontal support.

15. A display system for displaying and dispensing a plurality of backwardly extending aligned groupings of like shaped products, the display comprising:

a plurality of stacked horizontal supports for receiving a plurality of pocket modules, the pocket modules horizontally aligned in a row on each support, each row arranged in a cascading configuration with at least one row having a row above and said row above offset from the one row,

each pocket module formed of plastic for holding and fronting one grouping of the plurality of backwardly extending aligned groupings of product pieces, the pocket module having a pair of sidewall portions, a front side, a back side, a portion extending between the sidewalls, and a pusher portion extending from the back side, the pair of sidewall portions, the portion extending between the sidewalls, and the pusher portion all integral with one another.

16. The display of claim 15 wherein each horizontal support is configured as a shelf and is formed of plastic, and wherein each horizontal support has an integral base portion, an integral back side portion, an integral top portion, and an integral front constraint portion, the shelves in an upright stack;

17. A display system for displaying and dispensing a plurality of substantially backwardly extending aligned groupings of like-shaped products, the display comprising:

a plurality of pocket modules,

a plurality of stacked horizontal supports for receiving the plurality of pocket modules, the pocket modules horizontally aligned in a row on each support, the plurality of stacked horizontally supports having at least one support offset rearwardly from the support below said one support whereby the rows of pocket modules are positioned as a cascading configuration,

each pocket module formed of transparent plastic for holding and fronting one grouping of the plurality of backwardly extending aligned groupings of product pieces, the pocket module having a pair of sidewall portions, a front side, a back side, and a portion extending between the sidewalls, the pair of sidewall portions, the portion extending between the sidewall portions, and the pusher portion all integral with one another, each pocket module having a pocket volume for receiving the grouping of product pieces and an insertion and removal zone for placement and removal of product in the pocket volume, said insertion and removal zone sized by said display whereby not more that one product piece may be removed at a time.

18. A method of manufacturing a display for displaying and dispensing a plurality of groupings arranged in a matrix of product pieces, each grouping comprising a plurality of aligned product pieces extending rearwardly, the method comprising the steps of:

shaping a plurality of planar cut out portions of rigid plastic sheet material, each cut out portion providing for a pair of sidewall portions, a portion for extending between the sidewall portions and a pusher portion;

heating and bending each of the cut-out portions thereby forming a unitary pocket module with an interior pocket volume and having a front side, a back side, a left side, a right

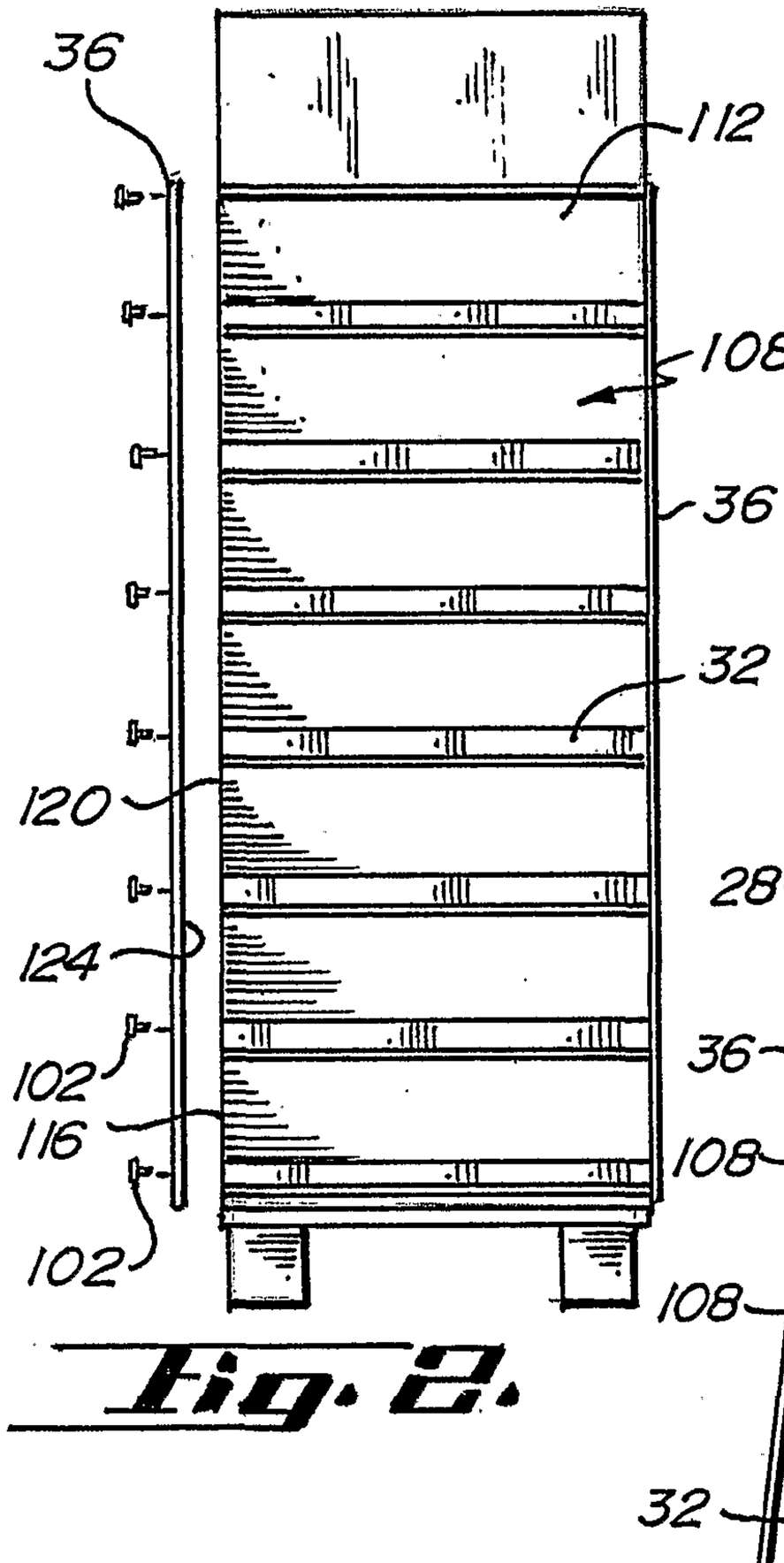


Fig. 2.

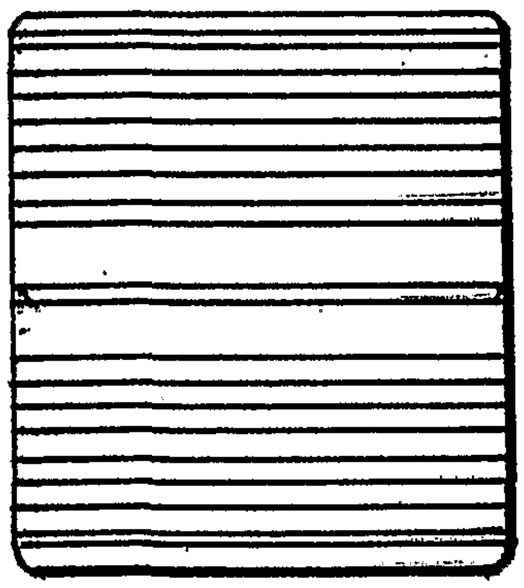


Fig. 3.

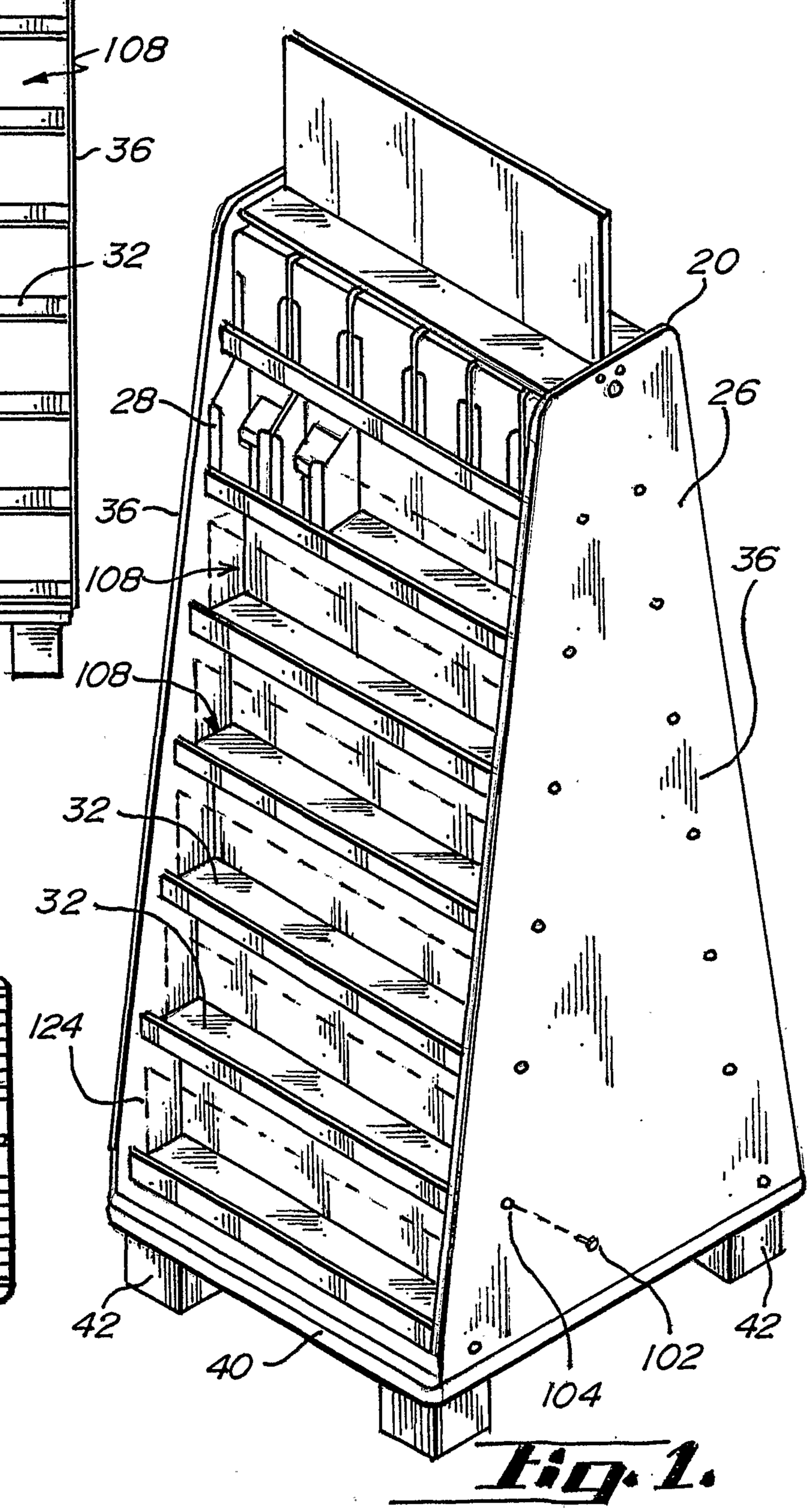


Fig. 1.

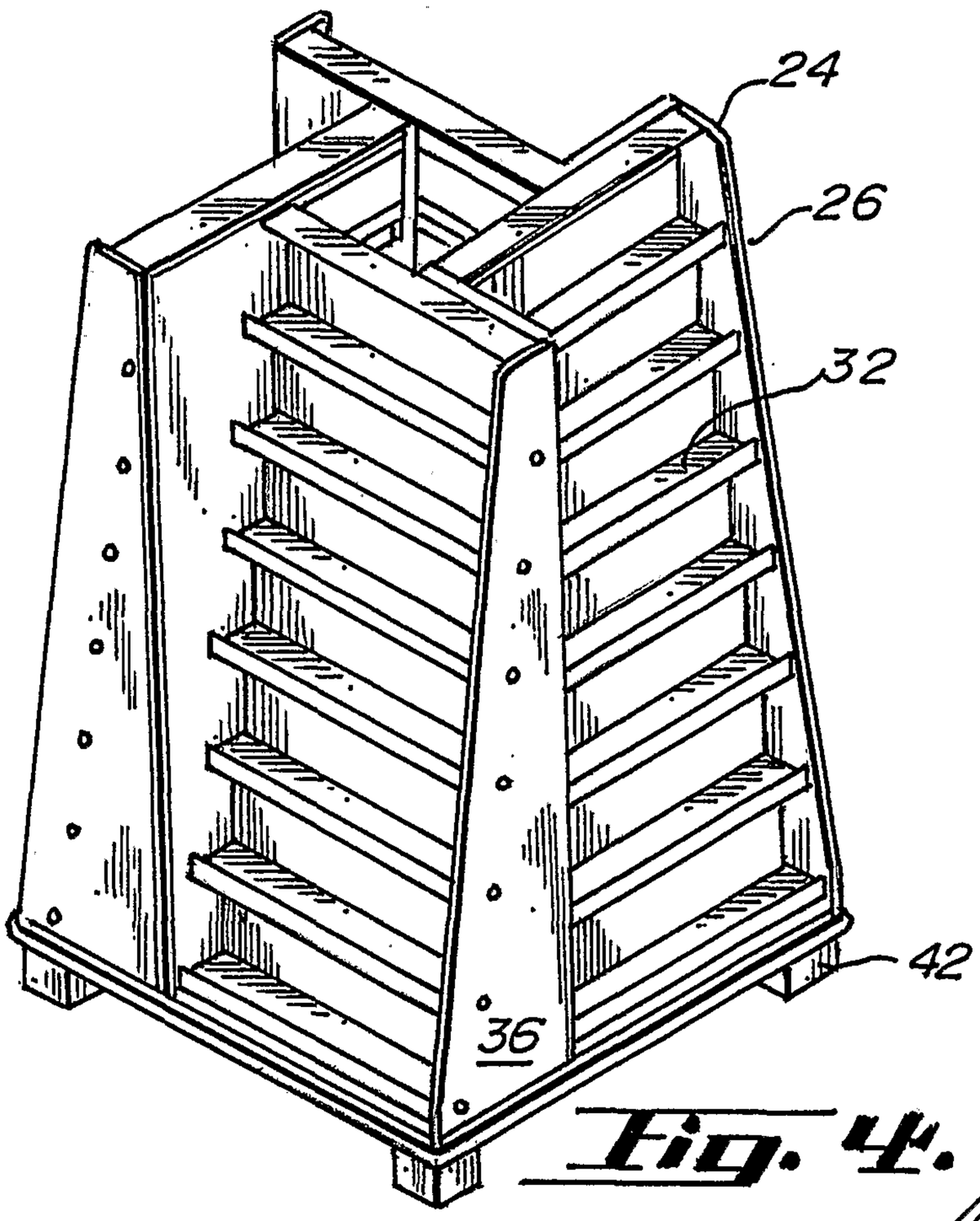


Fig. 4.

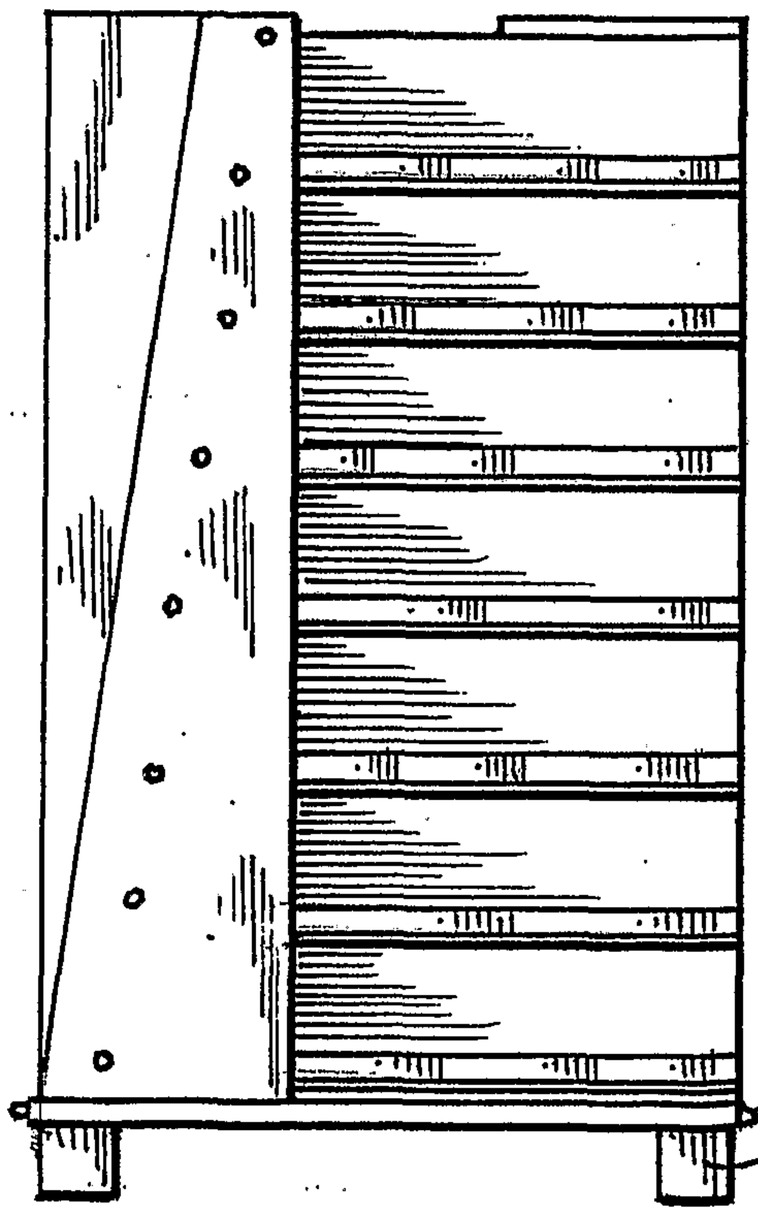


Fig. 5.

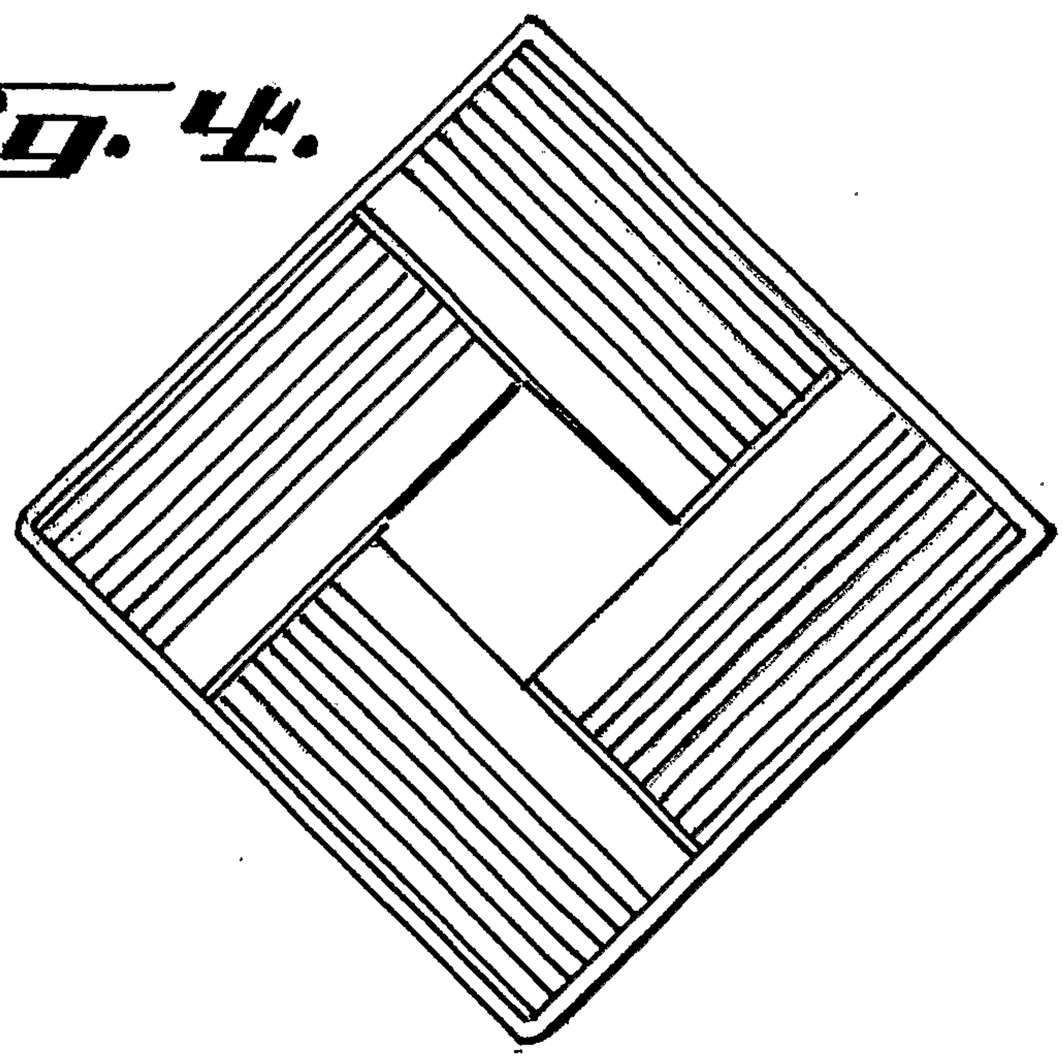


Fig. 6.

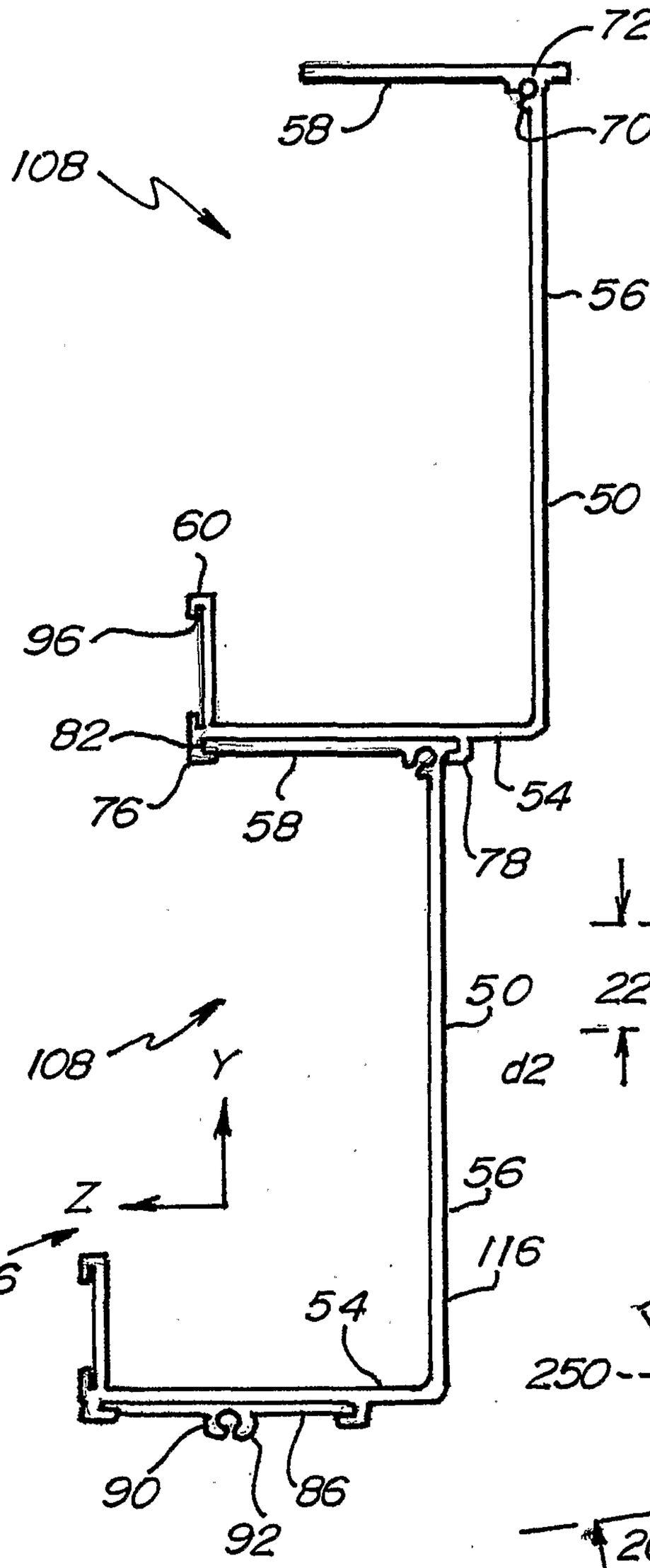
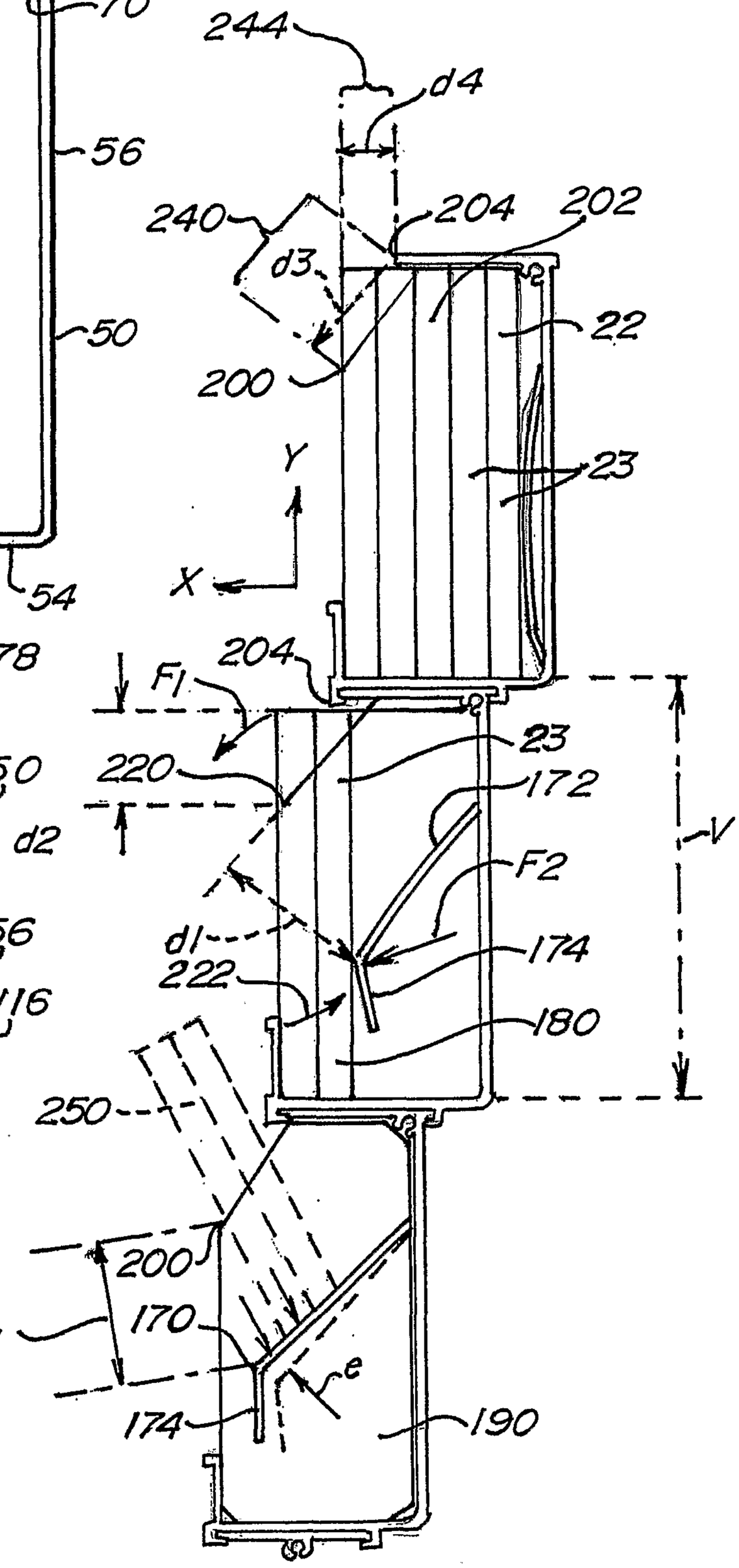


Fig. 7.

Fig. 8.



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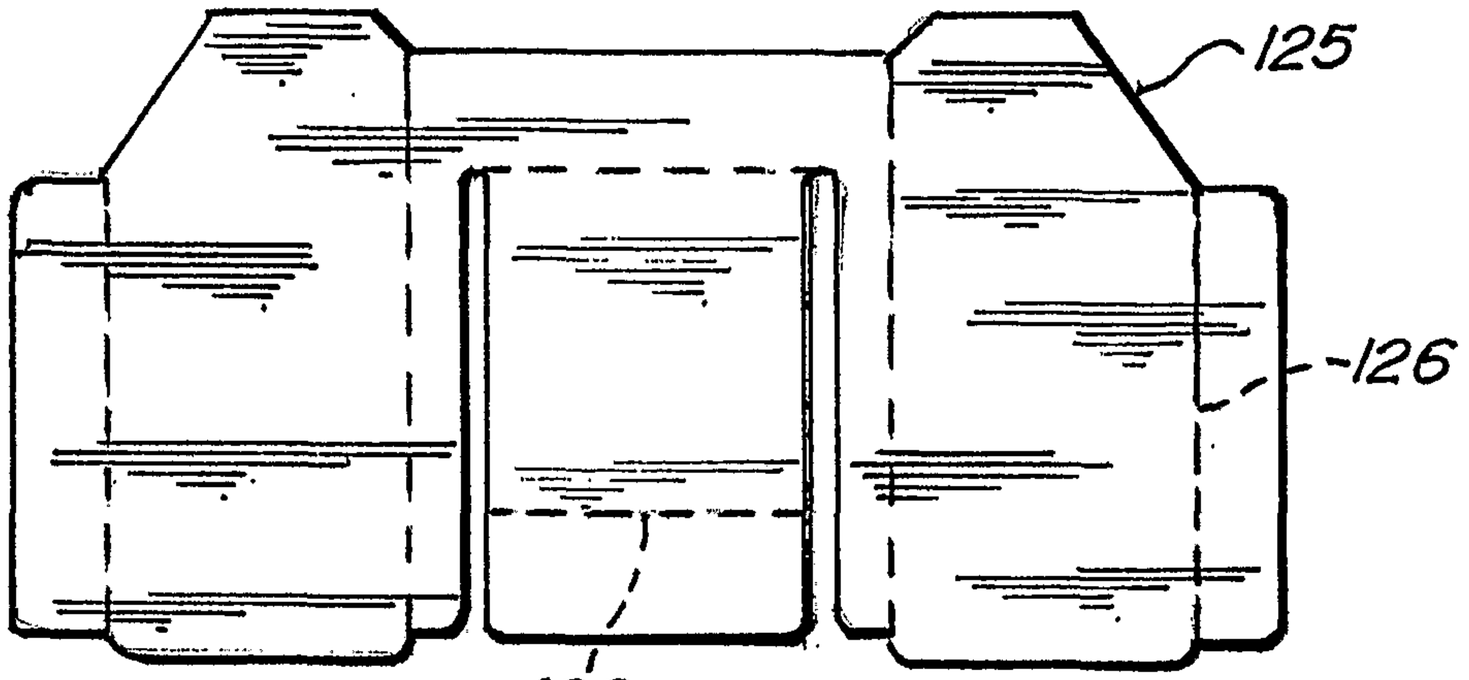
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Fig. 11.

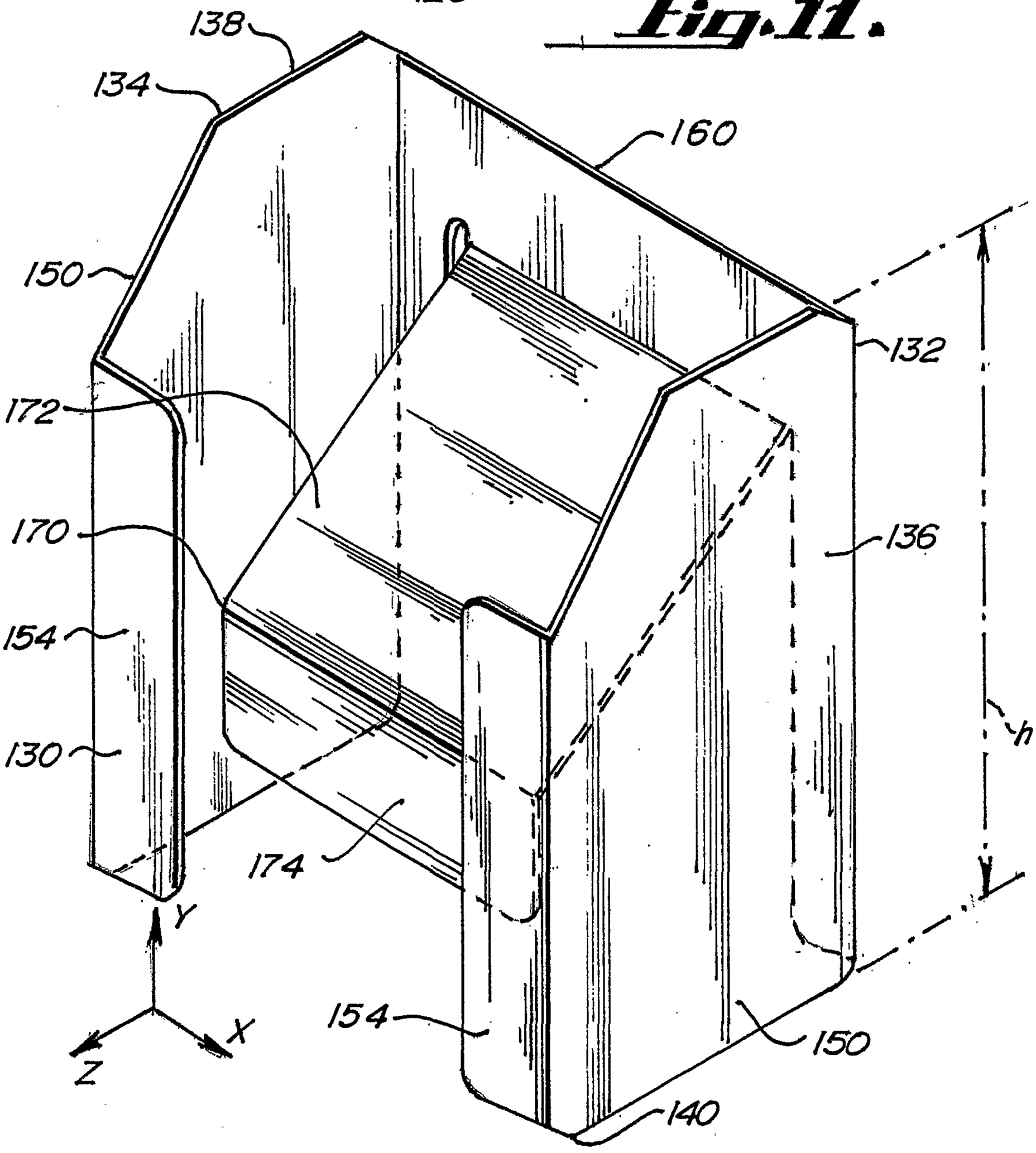
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Fig. 10.

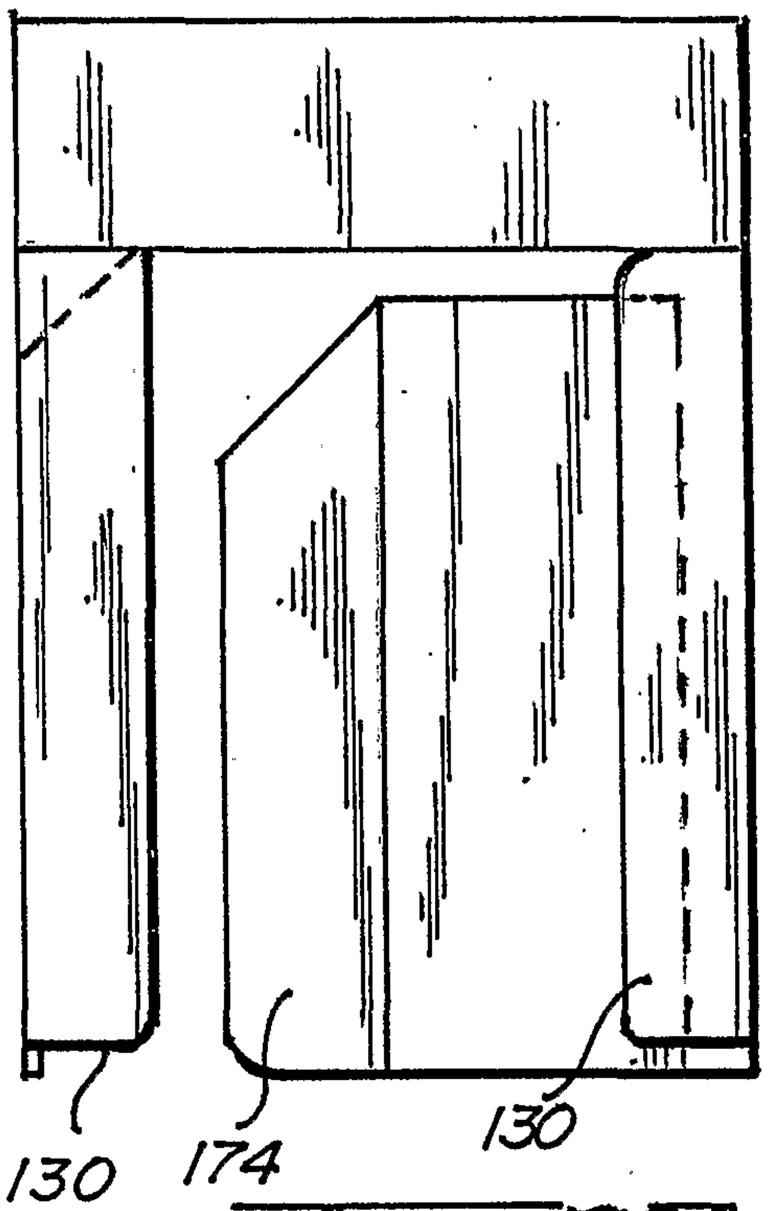


fig. 13.

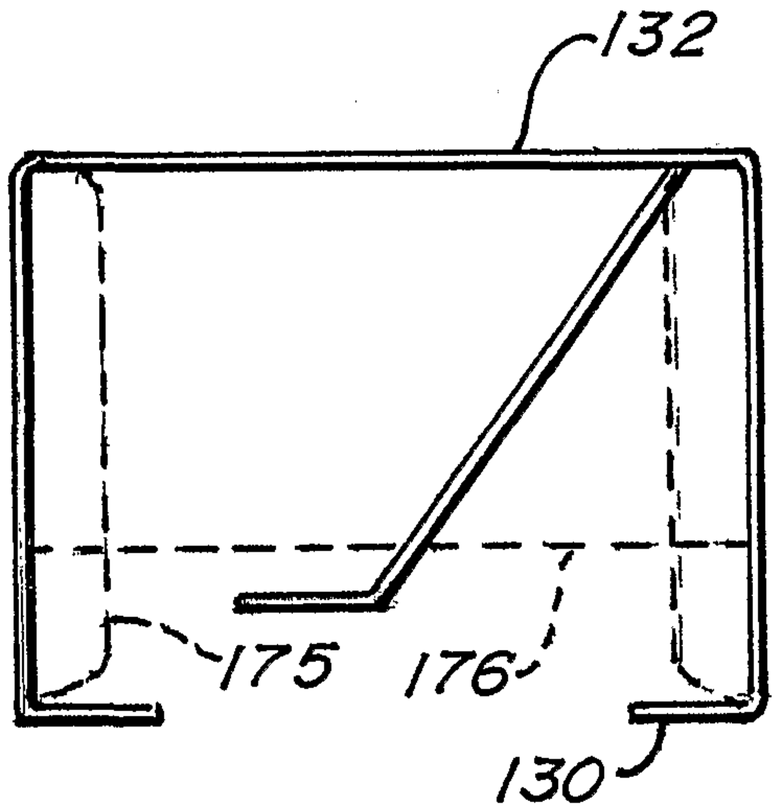


fig. 14.

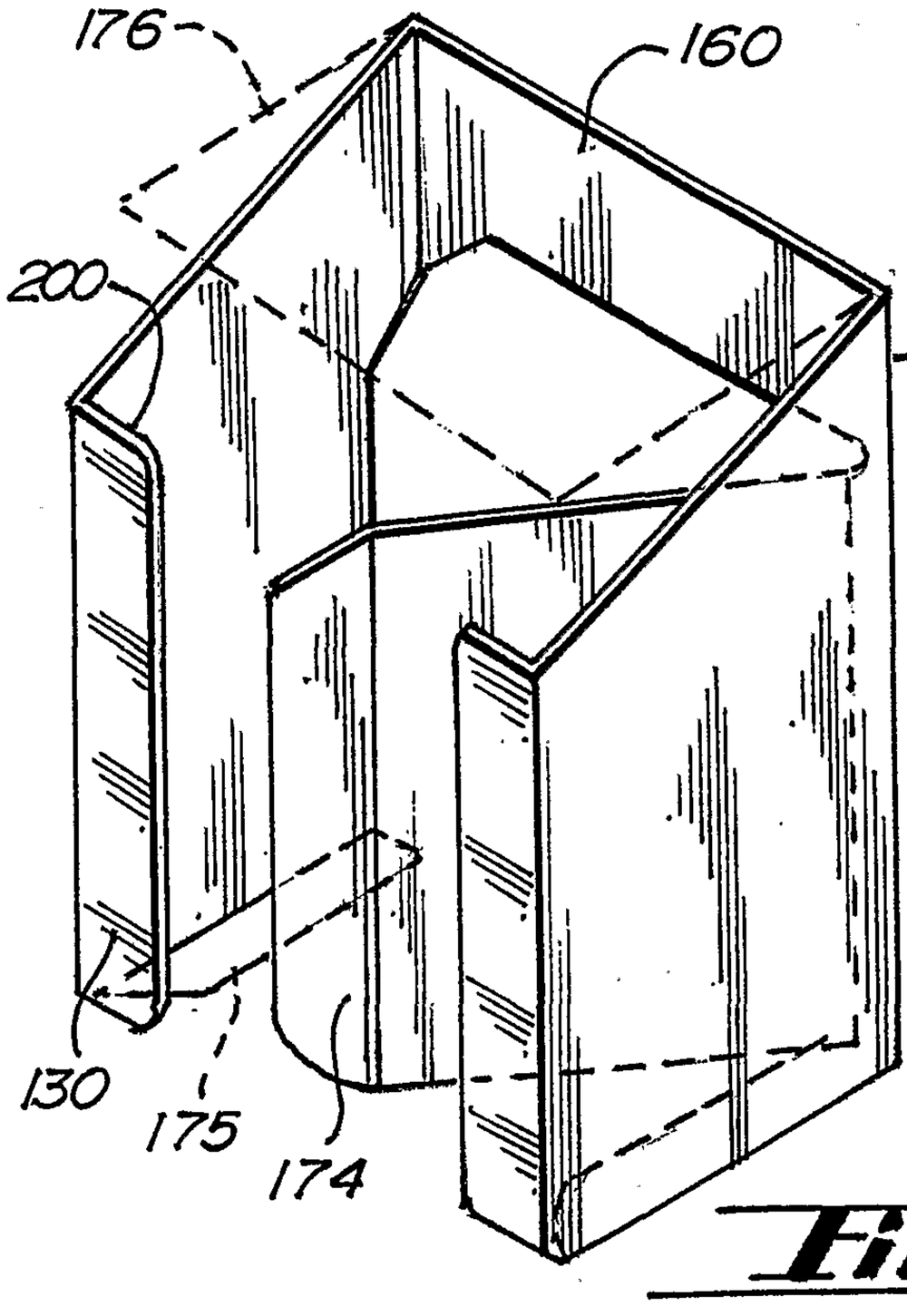
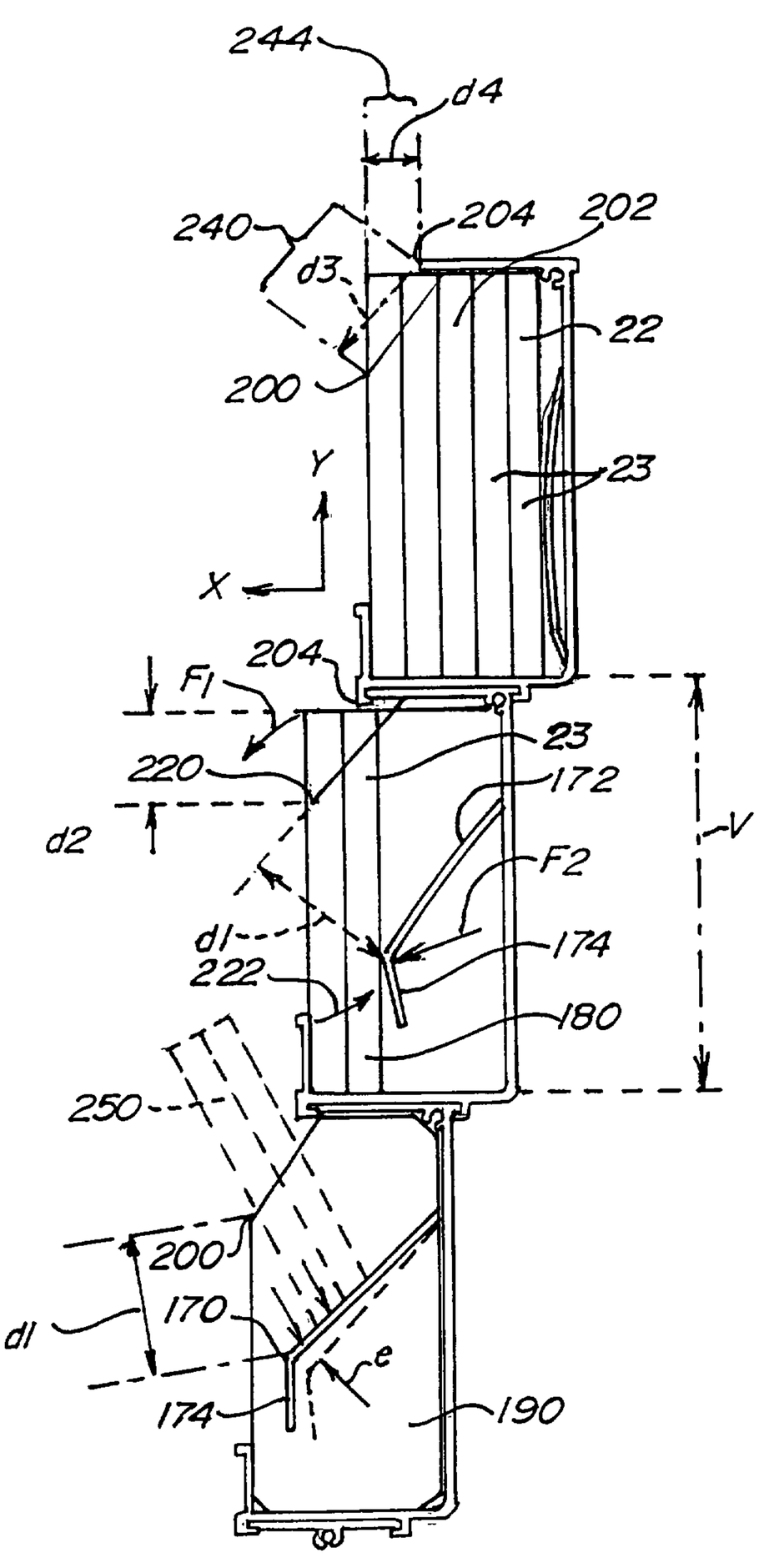


fig. 12.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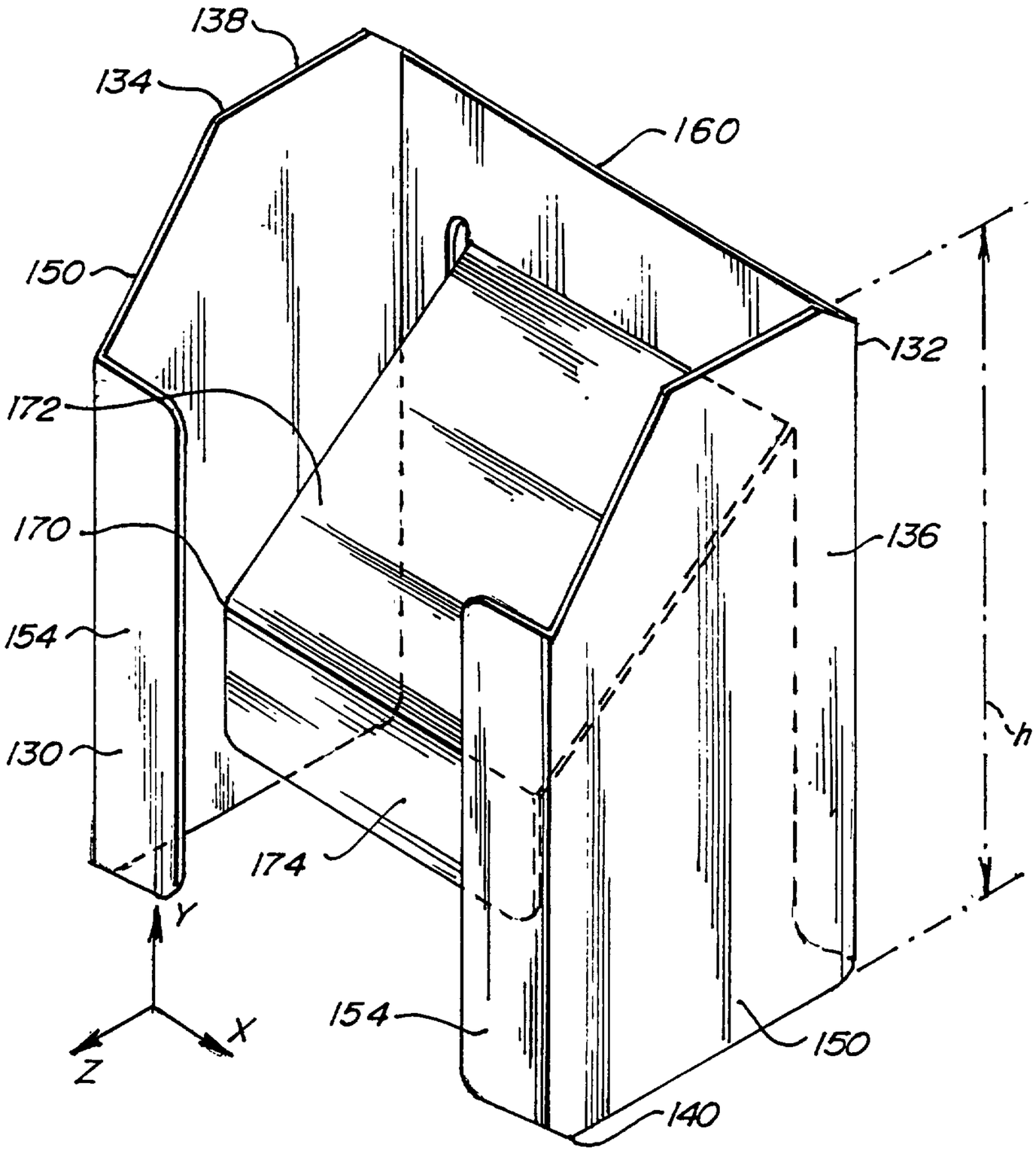
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